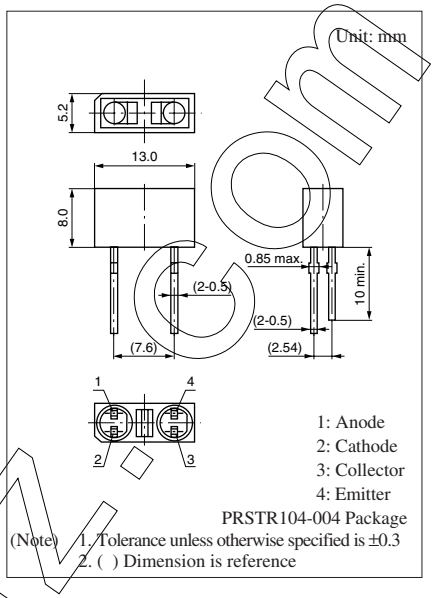
CNZ2179 (ON2179)

Reflective photosensor

Non-contact point SW, object sensing



■ Overview

CNZ2179 is a reflective photosensor with a long focal distance, in which a high efficiency GaAs infrared light emitting diode is used as a light emitting element and a high sensitivity Si phototransistor is used as the light detecting element.

■ Features

- Long focal distance: 6 mm (typ.)
- Visible light cutoff resin is used

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Reverse voltage	V_R	3	V
	Forward current	I_F	50	mA
	Power dissipation *1	P_D	75	mW
Output (Photo transistor)	Collector-emitter voltage (Base open)	V_{CEO}	20	V
	Emitter-collector voltage (Base open)	V_{ECO}	5	V
	Collector current	I_C	20	mA
	Collector power dissipation *2	P_C	100	mW
Temperature	Operating ambient temperature	T_{opr}	−25 to +80	°C
	Storage temperature	T_{stg}	−30 to +85	°C

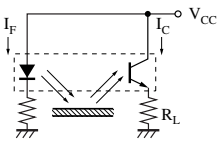
Note) ∗1: Input power derating ratio is 1.25 mW/°C at $T_a \geq 25°C$.
∗2: Output power derating ratio is 1.67 mW/°C at $T_a \geq 25°C$.

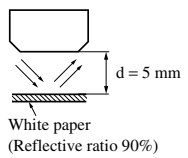
■ Electrical-Optical Characteristics $T_a = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Forward voltage	V_F	$I_F = 50$ mA		1.3	1.5	V
	Reverse current	I_R	$V_R = 3$ V			10	µA
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 10$ V			200	nA
Transfer characteristics	Collector current *1, 2	I_C	$V_{CE} = 5$ V, $I_F = 20$ mA, d = 5 mm	180		1 500	µA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 50$ mA, $I_C = 0.1$ mA			0.5	V
	Rise time	t_r	$V_{CC} = 10$ V, $I_C = 0.1$ mA, $R_L = 100\ \Omega$		20		µs
	Fall time	t_f			20		µs

Note) 1. Input and output are handled electrically.
2. This product is not designed to withstand radiation
3. ∗1: Output current measurement circuit
(Ambient light is shut off completely)
∗2: Rank classification

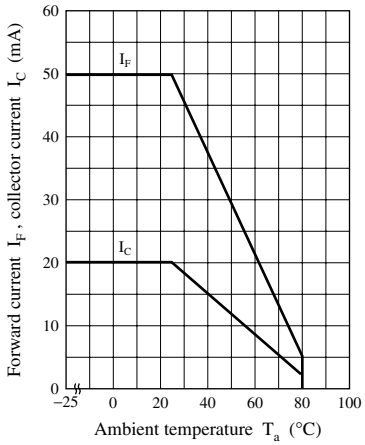
Rank	Q	R	S
I_C (µA)	180 to 550	300 to 900	500 to 1 500



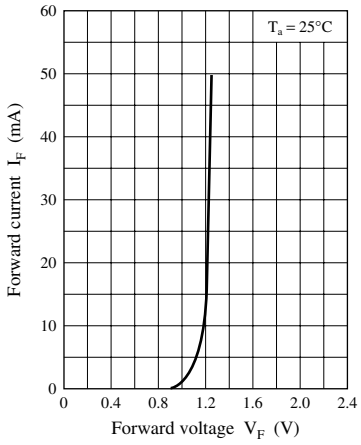


Note) The part number in the parenthesis shows conventional part number.

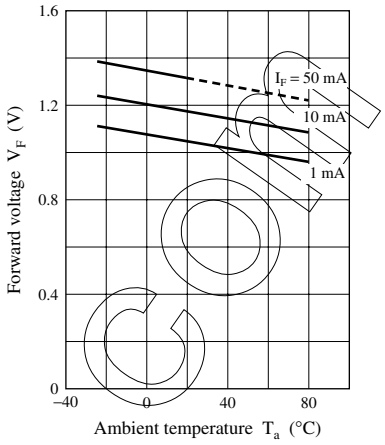
I_F , I_C — T_a



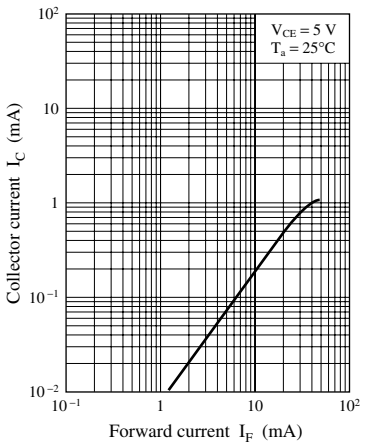
I_F — V_F



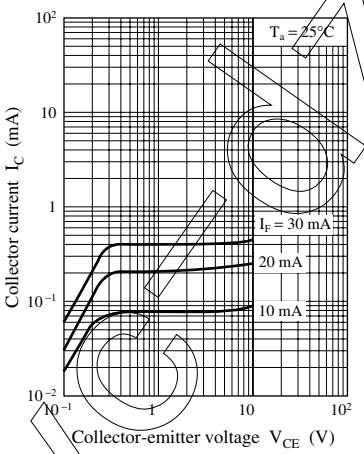
V_F — T_a



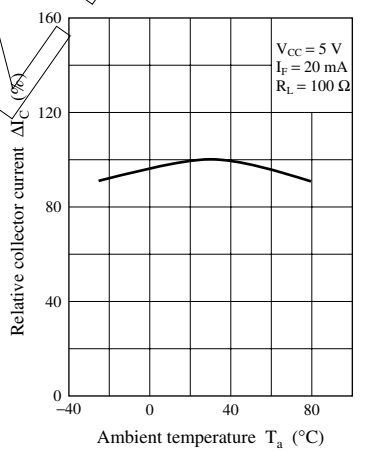
I_C — I_F



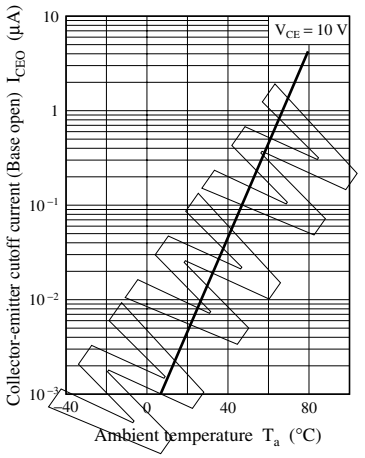
I_C — V_{CE}



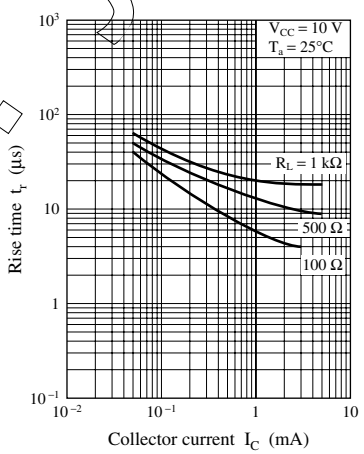
ΔI_C — T_a



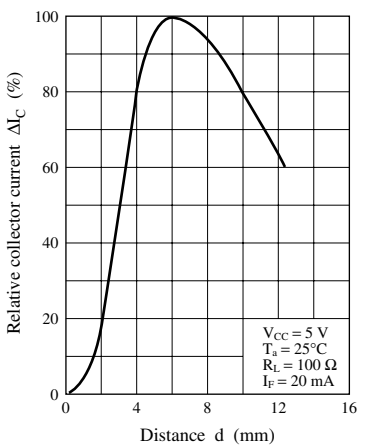
I_{CEO} — T_a



t_r — I_C



ΔI_C — d



⚠ Caution for Safety

⚠ DANGER

■ This product contains Gallium Arsenide (GaAs).

GaAs powder and vapor are hazardous to human health if inhaled or ingested. Do not burn, destroy, cut, cleave off, or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded form general industrial waste or household garbage.

Request for your special attention and precautions in using the technical information and semiconductors described in this material

(1) An export permit needs to be obtained from the competent authorities of the Japanese Government if any of the products or technical information described in this material and controlled under the "Foreign Exchange and Foreign Trade Law" is to be exported or taken out of Japan.

(2) The technical information described in this material is limited to showing representative characteristics and applied circuits examples of the products. It neither warrants non-infringement of intellectual property right or any other rights owned by our company or a third party, nor grants any license.

(3) We are not liable for the infringement of rights owned by a third party arising out of the use of the technical information as described in this material.

(4) The products described in this material are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(5) The products and product specifications described in this material are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(6) When designing your equipment, comply with the guaranteed values, in particular those of maximum rating, the range of operating power supply voltage, and heat radiation characteristics. Otherwise, we will not be liable for any defect which may arise later in your equipment.
Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(7) When using products for which damp-proof packing is required, observe the conditions (including shelf life and amount of time let standing of unsealed items) agreed upon when specification sheets are individually exchanged.

(8) This material may be not reprinted or reproduced whether wholly or partially, without the prior written permission of Matsushita Electric Industrial Co., Ltd.